



## **DEPARTMENT OF TRANSPORTATION**

### **Federal Aviation Administration**

#### **14 CFR Part 39**

**[Docket No. FAA-2023-0436; Project Identifier AD-2022-00395-T; Amendment 39-22581; AD 2023-21-09]**

**RIN 2120-AA64**

#### **Airworthiness Directives; The Boeing Company Airplanes**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for all The Boeing Company Model 777-200, 777-200LR, 777-300, 777-300ER, and 777F series airplanes. This AD was prompted by a report of a “FLAPS DRIVE” caution message in flight due to the torque trip indicator of the No. 2 trailing edge (TE) flap transmission assembly being in the set position, which resulted in an air turn-back. This AD requires an inspection or records review to determine the serial numbers of the TE flap transmission and gearbox assemblies, and applicable on-condition corrective actions. This AD also limits the installation of affected parts. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:**

*AD Docket:* You may examine the AD docket at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2023-0436; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

*Material Incorporated by Reference:*

- For service information identified in this final rule, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; website [myboeingfleet.com](https://myboeingfleet.com).

- You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195. It is also available at [regulations.gov](https://www.regulations.gov) under Docket No. FAA-2023-0436.

**FOR FURTHER INFORMATION CONTACT:** Anthony Caldejon, Aviation Safety Engineer, FAA, 2200 South 216th St., Des Moines, WA 98198; telephone: 206-231-3534; email: [anthony.v.caldejon@faa.gov](mailto:anthony.v.caldejon@faa.gov).

**SUPPLEMENTARY INFORMATION:****Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to all The Boeing Company Model 777-200, 777-200LR, 777-300, 777-300ER, and 777F series airplanes. The NPRM published in the *Federal Register* on April 6, 2023 (88 FR 20433). The NPRM was prompted by a report of a “FLAPS DRIVE” caution message in flight due to the torque trip indicator of the No.

2 TE flap transmission assembly being in the set position, which resulted in an air turn-back. In the NPRM, the FAA proposed to require an inspection or records review to determine the serial numbers of the TE flap transmission and gearbox assemblies, and applicable on-condition corrective actions. The FAA also proposed to limit the installation of affected parts. The FAA is issuing this AD to address a broken ratchet pawl assembly in combination with an upstream torque tube disconnect, which can cause failure of the no-back brake to hold flap surfaces in a commanded position, and possible debris in the transmission assembly, which can prevent the pawl from engaging the ratchet plate or cause other damage to the transmission assembly. The unsafe condition, if not addressed, could result in asymmetric loss of the lift that can prevent continued safe flight and landing.

## **Discussion of Final Airworthiness Directive**

### **Comments**

The FAA received comments from Boeing and the Air Line Pilots Association, International (ALPA) who supported the NPRM without change.

The FAA received additional comments from four commenters, including Air France Industries, China Eastern Tech, FedEx, and United Airlines (United). FedEx and United supported the NPRM and had additional comments. The following presents the comments received on the NPRM and the FAA's response to each comment.

### **Request to Allow Installation of Additional Parts**

China Eastern Tech, FedEx, and United requested that paragraph (j) of the proposed AD be revised to allow installation of parts on which the inspection and applicable corrective actions have been accomplished in accordance with Boeing Alert Requirements Bulletin 777-27A0123 RB, dated October 11, 2021.

The FAA agrees with the commenters' request. Paragraph (i) of this AD allows credit for actions accomplished using Boeing Alert Requirements Bulletin 777-27A0123

RB, dated October 11, 2021. Therefore, the FAA has determined that it is also acceptable to allow installation of parts on which, prior to the effective date of this AD, the inspection and applicable corrective actions have been accomplished as specified in Boeing Alert Requirements Bulletin 777-27A0123 RB, dated October 11, 2021. The FAA has revised paragraph (j) of this AD accordingly.

#### **Request to Specify that the AD is Applicable to the Component**

Air France Industries requested that the FAA specify that the service information and proposed AD are applicable to the component (assembly), regardless of the component's installation status. The commenter stated that this would clarify the work of operators and shops and prevent shops from providing airlines with a replacement part on which the actions specified in the proposed AD have not been accomplished. Air France Industries noted that the proposed AD does not provide instructions for spare parts.

The FAA disagrees with the commenter's request. When the unsafe condition results from the installation of the appliance or part on an aircraft, the AD action is issued against the aircraft, not the appliance or part. In this case, the affected assemblies are rotatable parts, so it is possible that an affected assembly could be installed on numerous airplanes during its service life. Paragraph (j) of this AD prohibits the installation of an affected assembly on an airplane, unless the actions specified in the service information have been accomplished on that assembly. Therefore, no change to this AD is necessary.

#### **Request to Standardize Part Tracking Method**

United and FedEx requested that the proposed AD be revised to specify a different method of marking parts on which the service information has been accomplished. United noted that the service information specifies to mark the service bulletin number on the part, and suggested that having only a visual clue can be challenging to track. FedEx noted that the part number does not change after modification, which will present difficulties with operators' part tracking systems. FedEx

requested that the FAA work with Boeing to identify a standardized method for identifying modified parts, such as adding a letter after the serial number.

The FAA disagrees with the commenters' request. While the FAA acknowledges that it may be easier for the commenters to track modified parts using a revised serial number, the FAA cannot assume all operators would use the same tracking system. Additionally, part marking with a service bulletin number is an established process that has been required by other ADs. However, under the provisions specified in paragraph (k) of this AD, the FAA will consider requests for an alternative method of compliance (AMOC).

### **Conclusion**

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

### **Related Service Information under 1 CFR Part 51**

The FAA reviewed Boeing Alert Requirements Bulletin 777-27A0123 RB, Revision 1, dated January 16, 2023. This service information specifies procedures for an inspection or records review for affected serial numbers of the TE flap transmission and gearbox assemblies at positions 1 through 8. For affected serial numbers, the service information specifies procedures for either (1) removing the TE flap transmission assembly and installing a new or serviceable assembly, or (2) removing the TE flap transmission and ratchet pawl assemblies, inspecting the ratchet pawl assembly for damage and missing material, and, depending on the findings, either installing a new ratchet pawl assembly and a changed TE flap transmission assembly or replacing the

ratchet pawl assembly and TE flap transmission assembly with new or serviceable parts. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

### **Costs of Compliance**

The FAA estimates that this AD affects 267 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

#### **Estimated costs**

<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Inspection or records review	1 work-hour X \$85 per hour = \$85	\$0	\$85	\$22,695

The FAA estimates the following costs to do any necessary replacements that would be required based on the results of the inspection or records review. The FAA has no way of determining the number of aircraft that might need these replacements:

#### **Estimated costs for on-condition actions**

<b>Action</b>	<b>Labor cost</b>	<b>Parts cost</b>	<b>Cost per product</b>
Replacement	6 work-hours X \$85 per hour = \$510	\$5,090 per part	\$5,600

### **Authority for this Rulemaking**

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds

necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **The Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

### **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

**2023-21-09 The Boeing Company:** Amendment 39-22581; Docket No. FAA-2023-0436; Project Identifier AD-2022-00395-T.

**(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**(b) Affected ADs**

None.

**(c) Applicability**

This AD applies to all The Boeing Company Model 777-200, 777-200LR, 777-300, 777-300ER, and 777F series airplanes, certificated in any category.

**(d) Subject**

Air Transport Association (ATA) of America Code 27, Flight controls.

**(e) Unsafe Condition**

This AD was prompted by a report of a “FLAPS DRIVE” caution message in flight due to the torque trip indicator of the No. 2 trailing edge (TE) flap transmission assembly being in the set position, which resulted in an air turn-back. The FAA is issuing this AD to address a broken ratchet pawl assembly in combination with an upstream torque tube disconnect, which can cause failure of the no-back brake to hold flap surfaces in a commanded position, and possible debris in the transmission assembly, which can prevent the pawl from engaging the ratchet plate or cause other damage to the transmission assembly. The unsafe condition, if not addressed, could result in asymmetric loss of the lift that can prevent continued safe flight and landing.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

Except as specified by paragraph (h) of this AD: At the applicable times specified in the “Compliance” paragraph of Boeing Alert Requirements Bulletin 777-27A0123 RB, Revision 1, dated January 16, 2023, do all applicable actions identified in, and in



accordance with, the Accomplishment Instructions of Boeing Alert Requirements Bulletin 777-27A0123 RB, Revision 1, dated January 16, 2023.

Note 1 to paragraph (g): Guidance for accomplishing the actions required by this AD can be found in Boeing Alert Service Bulletin 777-27A0123, Revision 1, dated January 16, 2023, which is referred to in Boeing Alert Requirements Bulletin 777-27A0123 RB, Revision 1, dated January 16, 2023.

**(h) Exception to Service Information Specifications**

Where the Compliance Time columns of the tables in the “Compliance” paragraph of Boeing Alert Requirements Bulletin 777-27A0123 RB, Revision 1, dated January 16, 2023, use the phrase “the original issue date of Requirements Bulletin 777-27A0123 RB,” this AD requires using “the effective date of this AD.”

**(i) Credit for Previous Actions**

This paragraph provides credit for the actions specified in paragraph (g) of this AD, if those actions were performed before the effective date of this AD using Boeing Alert Requirements Bulletin 777-27A0123 RB, dated October 11, 2021.

**(j) Parts Installation Limitation**

As of the effective date of this AD, no person may install, on any airplane, an affected TE flap transmission or gearbox assembly, as identified in Appendix J of Boeing Alert Requirements Bulletin 777-27A0123 RB, Revision 1, dated January 16, 2023, unless the assembly has been inspected and all applicable corrective actions have been performed in accordance with Boeing Alert Requirements Bulletin 777-27A0123 RB, Revision 1, dated January 16, 2023. Affected TE flap transmission or gearbox assemblies on which, prior to the effective date of this AD, the inspection and all applicable corrective actions have been performed as specified in Boeing Alert Requirements Bulletin 777-27A0123 RB, dated October 11, 2021, are acceptable for installation.

**(k) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, AIR-520, Continued Operational Safety Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (l) of this AD. Information may be emailed to: 9-ANM-Seattle-ACO-AMOC-Requests@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) An AMOC that provides an acceptable level of safety may be used for any repair, modification, or alteration required by this AD if it is approved by The Boeing Company Organization Designation Authorization (ODA) that has been authorized by the Manager, AIR-520, Continued Operational Safety Branch, FAA, to make those findings. To be approved, the repair method, modification deviation, or alteration deviation must meet the certification basis of the airplane, and the approval must specifically refer to this AD.

**(l) Related Information**

For more information about this AD, contact Anthony Caldejon, Aviation Safety Engineer, FAA, 2200 South 216th St., Des Moines, WA 98198; telephone: 206-231-3534; email: anthony.v.caldejon@faa.gov.

**(m) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Boeing Alert Requirements Bulletin 777-27A0123 RB, Revision 1, dated January 16, 2023.

(ii) [Reserved]

(3) For service information identified in this AD, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminister Blvd., MC 110-SK57, Seal Beach, CA 90740-5600; telephone 562-797-1717; website [myboeingfleet.com](http://myboeingfleet.com).

(4) You may view this service information at the FAA, Airworthiness Products Section, Operational Safety Branch, 2200 South 216th St., Des Moines, WA. For information on the availability of this material at the FAA, call 206-231-3195.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: [www.archives.gov/federal-register/cfr/ibr-locations.html](http://www.archives.gov/federal-register/cfr/ibr-locations.html).

Issued on October 19, 2023.

Caitlin Locke, Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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